



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA FEDERAL CENTER  
100 ALABAMA STREET, S.W.  
ATLANTA, GEORGIA 30303-3104

AUG 7 1995

General James E. Bickford, Secretary  
Commonwealth of Kentucky  
Natural Resources and Environmental Protection Cabinet  
Capital Plaza Tower, 5th Floor  
Frankfort, KY 40601

Dear General Bickford:

The Environmental Protection Agency has completed review of the adopted revisions to Kentucky's water quality standards regulations which were submitted by letter dated August 11, 1995 to the Regional Administrator. The revisions were adopted as a new regulation, 401 KAR 5:030, Nondegradation policy implementation methodology, on July 12, 1995. The revisions to water quality standards were certified by the General Counsel of the Cabinet's Office of Legal Services as duly adopted pursuant to Kentucky law by signature within the submittal letter.

These revisions were adopted by the Commonwealth during the triennial review of water quality standards conducted by KDOW over the past three years. Numerous public meetings and hearings were conducted on the four regulations that currently comprise the Commonwealth's water quality standards. EPA acknowledges KDOW's extensive efforts to include the public and regulated community in discussions on the proposed revisions in an attempt to reach a consensus on new and revised provisions of water quality standards. This public review/outreach process generated a significant level of interest in the adopted revisions, as well as other revisions proposed (but not adopted) to 401 KAR 5:026, 5:029, and 5:031.

EPA considers the adoption of 401 KAR 5:030, in conjunction with the public review/comment process conducted on the existing provisions of 401 KAR 5:026, 5:029, and 5:031, to comprise the Commonwealth's triennial review of water quality standards. Based on our review, the procedures utilized by the Commonwealth in its review and revision of water quality standards are consistent with the procedural requirements of 40 CFR Section 131.20 for triennial review of water quality standards.

The Commonwealth has historically administered sound and innovative water programs, which have worked well to achieve a high level of water quality protection for waters of the Commonwealth. The newly-adopted provisions continue those efforts, and EPA has only a few remaining unresolved issues with the new standards provisions which were adopted during the triennial review.

The revisions adopted by the Commonwealth were developed in response to the federal water quality standards requirements at 40 CFR Section 131.12 (Antidegradation policy). The revisions establish the implementation methodology for all tiers of the Commonwealth's

antidegradation policy using a designational approach. The provisions establish the selection criteria, level of protection and designation process for the Tier II classification, denoted by the Commonwealth as water bodies whose quality exceeds that necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water and the Tier III Outstanding National Resource Water (ONRW) classification. All other waters of the Commonwealth are designated as Tier I (use protected waters).

The adopted provisions address control of point sources through the authorities of the KPDES permitting program under the provisions of the Commonwealth's antidegradation policy. The revisions also include the designation of three water body segments as ONRWs and 45 water body segments as Tier II waters. The results of EPA's review of the newly-adopted revisions are contained in an enclosure to this letter and are summarized below.

Under the authorities of Section 303(c) of the Clean Water Act (the Act), all provisions of 401 KAR 5:030, Nondegradation policy implementation methodology, with the exception of the specific subsections listed below, are hereby approved. As explained below and in the enclosure, EPA is disapproving two subsections and reserving its decision on two other subsections pending receipt of additional information from the Commonwealth. EPA finds that the adopted provisions provide a significant level of protection for the segments listed in 401 KAR 5:030 Section 3, but fail to include procedures for other waters.

The rationale for these determinations is that, although the adopted provisions provide a significant level of protection for the segments designated by the Commonwealth as Tier II waters, the adopted regulation fails to include procedures for other waters which are candidates for the Tier II decision process, fails to include adequate selection criteria, and fails to address degradation of carcinogenic parameters in a manner different from Tier I waters. Also, the Commonwealth's submittal failed to properly demonstrate that limited water quality lowering for certain parameters, which the Commonwealth allows without an antidegradation demonstration, meets a level of de minimis degradation.

It is our conclusion that the regulation was adopted as a methodology to implement the Commonwealth's statewide antidegradation policy contained in 401 KAR 5:029 for point sources, and that these procedures fail to address the implementation of the policy for the entire group of waters and parameters which should receive consideration under Tier II of the policy.

### **DISAPPROVED ITEMS**

401 KAR 5:030 Section 1(3):

This section describes criteria for designating waters to be given Tier II protection. EPA is disapproving this section because these criteria are not sufficiently inclusive and, therefore, do not meet the requirements of 40 CFR Section 131.12. In order to fully comply with the federal requirement, the Commonwealth should modify this subsection to include additional selection criteria under subsection 1(3). The additional selection criteria must address the inclusion of Tier II waters where water quality conditions exceed the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. The additional selection criteria could use either the designational approach or the pollutant-by-pollutant approach.

401 KAR 5:030 Section 1(5)(a)(5):

This section establishes the requirements for addressing the discharge of carcinogenic pollutants to Tier II waters. The adopted provisions state that carcinogenic pollutants will be limited in the same manner as in use protected waters.

EPA is disapproving this subsection because it does not include a Tier II decision process prior to allowing lower water quality for carcinogens, and, therefore, does not meet the requirements of 40 CFR Section 131.12. In order to be approvable by EPA, the Tier II decision process should be modified to include justification for lowering water quality for carcinogens in the same or similar manner as for other parameters.

**REQUEST FOR INFORMATION**

EPA is requesting additional information regarding the Commonwealth's implementation of Tier II for two other provisions of the adopted revisions. EPA is withholding formal action on the two subsections for the reasons discussed below.

401 KAR 5:030 Section 1(5)(a)(1):

This provision provides that discharges meeting the 10 mg/l carbonaceous biochemical oxygen demand, 2 mg/l ammonia-nitrogen, and 7 mg/l dissolved oxygen are allowed without further consideration of alternatives for effluent disposal other than direct discharge. The Commonwealth has not yet provided satisfactory substantiation of the factual basis for this decision. These provisions were submitted to EPA without a demonstration that the degradation resulting from the 10-2-7 limits would result in only a de minimis level of degradation of instream dissolved oxygen.

It may be possible for the Commonwealth to provide further justification on the decision in regard to the amount and significance of degradation which will result from the 10-2-7 limits. If such justification supports the decision, and the 10-2-7 limits are shown to result in de minimis degradation in Tier II waters, no further revisions to this portion of the regulation would be necessary to comply with the provisions of 40 CFR Section 131.12. However, at this time, and on the basis of the information submitted, EPA is unable to approve this portion of the revisions. Upon review of any further justification, EPA will act on this provision.

401 KAR 5:030 Section 1(5)(b):

This provision includes the portion of the Tier II decision process relating to consideration of the socioeconomic impacts of the proposed activity for which an application for discharge has been filed. The validity of this section regarding the implementation of Tier II requirements for domestic discharges depends on whether the Commonwealth is able to provide the justification requested for section 401 KAR 5:030 Section 1(5)(a)(1). That justification is needed to document the degree of water quality lowering that will result from 10-2-7 limits for domestic discharges, as discussed above. Accordingly, EPA is withholding action on this portion of the revisions as well.

## FOLLOW-UP ACTIONS

Regarding the disapproved provisions, the Commonwealth should adopt replacement standards consistent with the above discussion within 90 days of receipt of this letter. Regarding the provisions for which EPA is requesting additional rationale for the adopted standards, the Commonwealth should also provide the requested supporting information within 90 days of receipt of this letter.

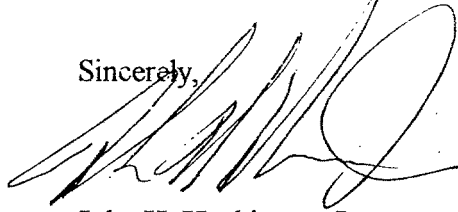
The implementation of Tier II water quality protection for more than 90,000 stream miles in the Commonwealth is a difficult task. One of the factors involved in the Tier II decision process involves comparison of projected effects of additional discharges of pollutants on ambient water quality conditions, which could potentially be a significant dedication of KDOW resources. However, I am hopeful that our agencies can come to an agreement which successfully addresses this issue, given the range of acceptable alternative approaches.

Based on the numerous meetings and discussions between EPA and Kentucky Division of Water (KDOW) staff, I also understand that KDOW staff has initiated monitoring activities under the Commonwealth's watershed planning program which may provide a framework for additional procedures, which could be used to address at least a portion of EPA's concerns. One option for the Commonwealth to consider is the addition of public disclosure activities for proposed activities expected to result in water quality degradation during watershed planning.

As stated previously, the adopted provisions apply to point source discharges, and other provisions of the Kentucky Administrative Regulation apply to nonpoint source discharges under the antidegradation policy in 401 KAR 5:029. We suggest that the Commonwealth clarify the statement of necessity and function in 401 KAR 5:030 to reflect those authorities, i.e., the authorities relating to nonpoint sources, during the next review of water quality standards.

I have directed my staff to provide assistance to you or your staff in this process. I will also keep you informed on efforts should federal rulemaking be required in resolution of these issues.

Sincerely,



John H. Hankinson, Jr.  
Regional Administrator

Enclosure

cc: Mr. Jack Wilson

## ENCLOSURE I

### SUMMARY OF EPA REVIEW OF REVISIONS TO THE COMMONWEALTH'S WATER QUALITY STANDARDS

#### TIER III

The adopted revisions include criteria for selection of Outstanding National Resource Waters (ONRWs), procedures for designation of ONRWs, and the designation of three segments as ONRWs: portions of the Red River, the Underground River System within Mammoth Cave National Park, and the Big South Fork of the Cumberland River. The designation of these waters as ONRWs represents an assignment of the ultimate level of water quality and habitat protection. Few states nationally have taken this final step of designating individual waters as ONRWs. The Commonwealth is congratulated on this action to maintain levels of water quality and aquatic habitat for these segments, as well as the inclusion of a definitive designation process and definitive selection criteria to be used in future considerations of other water bodies as ONRWs.

#### TIER II

##### Inclusiveness

The Commonwealth adopted a designational approach for protection of high quality waters. Using this approach, a state can designate Tier II water bodies either prior to the time of an antidegradation review, or during the antidegradation review process, e.g., during NPDES permit issuance. Due to many considerations, the Commonwealth chose to use a combination of these two approaches.

In response to an EPA request for the rationale for using such an approach, KDEP stated the following:

"The Commonwealth chose the designational approach because it was more reasonably and realistically implementable. A drawback to the parameter by parameter approach was lack of data on parameters in unmeasured streams. To use the parameter by parameter approach, it was our contention that it would take (at a minimum) two years of monthly data to determine the background concentration of any one parameter... The gathering of this data would be both expensive and time-consuming and was met with great opposition by the regulated community because all permitting on streams that had no data would stop for two years until the data were collected. It also meant that some streams with selected data may have to have new data collected if a particular parameter had not been measured. The final result would in many cases result in a stream or segment being Tier II for some parameters and Tier I for others. Determining permit limits in such a situation would be too complex. An additional complication would be in determining what a lowering of water quality would be for each parameter... The Cabinet chose a more straight forward approach to categorizing Tier II waters by using a biological approach that also included waters recognized as unique in the State. Once a water is determined to be a Tier II water, each pollutant on the KPDES permit will be subjected to the strict antidegradation requirements, which go above and beyond our conservative water quality-based approach already in place for use protected waters."

The Commonwealth adopted the following categories of waters as Tier II waters:

- o Kentucky Wild Rivers;
- o All Outstanding Resource Waters (ORWs), other than ORWs which are so designated solely due to the presence of federally threatened or endangered aquatic species;
- o Waters containing fish communities rated as "Excellent" by the use of the Index of Biotic Integrity; and
- o Waters in the cabinet's reference reach network.

Outstanding Resource Waters which are also Tier II waters include the following:

- o Waters designated under the Federal Wild and Scenic River Act, and
- o Waters identified under the Kentucky Nature Preserves Act.

Other waters may be included through cabinet action, including:

- o Segments flowing through or bounded by state or federal forest land, or are of exceptional aesthetic or ecological value or are within the boundaries of national, state, or local government parks, or are a part of unique geological or historical area recognized by state or federal designation,
- o Segments that are part of an undisturbed or relatively undisturbed watershed that can provide basic scientific data and possess outstanding water quality characteristics, or two of the following criteria:
  - o Support a diverse or unique native aquatic flora or fauna,
  - o Possess physical or chemical characteristics that provide an unusual and uncommon aquatic habitat, or
  - o Provide a unique aquatic environment within a physiographic region.

In the final Great Lakes Water Quality Guidance (60 F.R. 15366), EPA specified procedures for identifying high quality waters (Tier II waters) on a pollutant by pollutant basis. While a designational approach for implementation of Tier II of antidegradation was not absolutely prohibited under the final Guidance, such an approach was envisioned only under very limited circumstances, with a key consideration being whether such designations are fully inclusive of Tier II waters. Unfortunately, Kentucky's designations are not fully inclusive.

Based on review of the adopted regulation and the materials submitted by the Commonwealth, the above categories do not explicitly include the criteria for water quality which exceeds the "levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water..." Therefore, the focus of our review was to determine whether (1) the operational definition of the Commonwealth's Tier II waters was sufficiently close to the federal definition, and (2) the Commonwealth's implementation of the policy in the future, e.g., the designation of additional Tier II water bodies during the NPDES permitting process, occurs in generally the same situations or circumstances as envisioned by the federal policy. The Commonwealth's procedures are contained in Subsection 5 of this section.

Regarding the definition of Tier II waters in the Commonwealth, the main issue is whether

KDOW has adopted appropriate selection criteria which can be considered as operationally equivalent to the federal requirement of Tier II waters, i.e., "where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water." The list of selection criteria adopted by the Commonwealth includes waters of "exceptional" aesthetic or ecological value, part of undisturbed or relatively undisturbed watersheds which possess "outstanding" water quality characteristics, support "unique" flora or fauna, possess "unusual and uncommon" aquatic habitat, provide "unique" aquatic environment, contain fish communities rated as "excellent", or are listed in the Commonwealth's reference reach network. Water bodies with these characteristics are certainly Tier II waters, however, it is our position that there are other waters of the Commonwealth which should be subjected to the Tier II process prior to allowing lowering of water quality to occur in these waters.

In fact, EPA has historically taken the position that "All parameters do not need to be better quality than the State's ambient criteria for the water to be deemed a 'high quality water'." (Water Quality Standards Handbook: Second Edition, USEPA, August 1994). Therefore, the provisions adopted by the Commonwealth set up a process for protection of what EPA considers as a subgroup of Tier II waters in Kentucky, and the newly adopted revisions do not require consideration of all candidate waters for application of the Tier II decision process.

Regarding the issue of whether implementation of Tier II requirements occurs in generally the same situations or circumstances as envisioned by the federal policy, there is no requirement, per se, in the adopted regulations, that the Commonwealth determines the applicability of Tier II requirements for new and expanded discharges, i.e., when the possible lowering of water quality is proposed. The adopted procedures, as clarified in the December 8, 1995 letter from KDOW, allude to a process where the necessary data would be gathered to determine if a segment is a Tier II water prior to the issuance of a new or expanded permit, should sufficient resources be available or should the proposed discharger conduct the studies.

In response to the question,

"The Cabinet's statement in the RIA for 404 KAR 5:026 that 'the DOW will perform field assessments of waters with high quality potential and will determine all classifications based on its assessment or on petitions submitted by the public' is interpreted to mean that, before the issuance of any new or expanded discharge permit, the Commonwealth will determine the appropriate antidegradation category (Tier I, II or III) for each water body that is not presently listed in Section 3 of 401 KAR 5:030. Further it is our understanding that the Commonwealth can deny any permit to waters of the state. Is this interpretation correct?"

KDOW stated the following:

"The statement in the RIA cannot be applied to 401 KAR 5:030 since the revisions in 401 KAR 5:026 were withdrawn. With the adoption of 401 KAR 5:030, all waters not listed in Section 3 were categorized as use protected waters (Tier I) and receive full protection for all appropriate uses. This means that applicable criteria for warmwater aquatic habitat use, primary and secondary contact recreation and domestic water supply (if applicable) apply to these waters. As stated in the answer to question seven, the Cabinet will prioritize waters for field assessments based on their potential to be recategorized as Tier II waters to verify their status (as resources allow). The cabinet has the statutory authority to deny permits to

waters of the state."

The Kentucky Division of Water, in a January 28, 1997 letter to EPA, provided additional information on the issue of future consideration of Tier II waters:

"... for streams that have not been designated for antidegradation purposes, a permit request for a new or expanded discharge triggers a review of any instream and land use data to screen the site for potential high quality status. Undesignated streams will never be assumed to be use protected. If there is a reasonable possibility that the stream could be considered high quality, the Division conducts a biological survey."

"Because the antidegradation regulation applies only to situations with new or expanded discharge applications ... resources can be focused on those potential high quality streams that are vulnerable to degradation instead of considering all of the state's undesignated waters. Presently, this is the only practical way in which the Division can carry out the program, and it also is protective of the designated and potential high quality waters in the state."

Considering the January 28, 1997 information regarding future consideration of additional water bodies for Tier II consideration, it is our conclusion that the Division of Water has adequately documented its intent to conduct an analysis of receiving waters for new and expanded discharges, but only for the adopted selection criteria discussed above. Thus, this does not resolve the identified concerns for consideration of all of the waters considered to be candidates for Tier II protection, as envisioned by the federal antidegradation policy.

#### Tier II Decision Methodology

Section 1(5) contains the procedure for implementing Tier II provisions for point sources. Differences between the federal Tier II decision process and the procedures adopted by the Commonwealth also provide a basis for disapproval of one portion of this subsection. In addition, EPA is withholding action on two portions of these provisions based on the need for additional information in regard to implementation of Tier II of antidegradation.

#### New and Expanded Domestic Discharges

New or expanded domestic discharges to Tier II waters are permitted at effluent limits no greater than 10 mg/l BOD<sub>5</sub>, 2 mg/l NH<sub>3</sub>-N, and 7 mg/l DO (10-2-7). These limits are permitted without site-specific consideration of the amount of instream lowering of DO levels (as long as instream DO criteria levels are met downstream of the discharge). This is equivalent to a decision to consider the amount of DO degradation associated with 10-2-7 limits as de minimis or insignificant in all instances.

The Commonwealth has also stated that, as a general rule, the disposal of treated domestic wastewater through land application methodologies is not a feasible alternative to discharging treated effluent due to the soil and subsurface conditions in the Commonwealth. This position appears to be well-founded as a general conclusion, but there may be specific locations where land application/disposal is a reasonable alternative for a specific discharge.



Also, this paragraph of the subsection does not require the evaluation of alternate discharge locations that would eliminate the need for the discharge into a Tier II water body, or require consideration of whether the lowering of water quality supports important social and economic development, even if unavoidable. (Under the adopted language, this is considered only where a permit applicant determines that the 10-2-7 limits cannot be met, pursuant to paragraph 5(b)(1) of this subsection.)

In summary, in order for subsection 5(a)(1) to be approvable as the full implementation methodology for Tier II of antidegradation, the Commonwealth should provide an analysis showing that the subsection 5(a)(1) limits will result in de minimis level of lowering of water quality in Tier II water bodies. (If the 10-2-7 limits are shown to result in de minimis degradation in Tier II waters, no further revisions to this portion of the regulation would be necessary to comply with the provisions of 40 CFR Section 131.12.)

New unpermitted or expanded domestic discharges are also permitted at the following limits for other parameters: 10 mg/l total suspended solids, 1 mg/l total phosphorus, and 200 colonies per 100 ml fecal coliform bacteria over a 30 day period.

### Toxics

For carcinogens, all new unpermitted and expanded discharges (both domestic and non-domestic) are permitted to meet instream water quality criteria levels downstream of the discharge. The Commonwealth's discharge criteria for carcinogens allows these parameters to be discharged at levels which will result in instream concentrations equal to the instream criteria values for these parameters.

The Commonwealth has stated that, in part, the rationale for this decision for carcinogens included the fact that the Commonwealth's water quality criteria for carcinogens are based on a level of protection of human health of one in one million, which is ten times more protective than EPA has allowed in other states, i.e., one in one hundred thousand. Although this is true, the Commonwealth's adopted procedures do not address degradation of water quality for these parameters in a manner different from Tier I water bodies. Therefore, lowering of water quality for carcinogens is permitted to occur without regard to a Tier II decision process. This is inconsistent with the provisions of 40 CFR Section 131.12(a)(2).

This subsection also requires that any other parameter in either a domestic or nondomestic discharge will be restricted to 1/2 of the applicable water quality instream criteria, i.e., only 1/2 of the allowable concentration is allowed downstream of the discharge. This is equivalent to a decision to consider as insignificant or de minimis the amount of lowering of water quality from all other parameters up to 50 percent of the assigned criteria. EPA defers to the Commonwealth in the selection of 50 percent as appropriate for water bodies of the Commonwealth.

### Socioeconomic Considerations and Analysis of Alternatives

Under the adopted regulation, permits for new unpermitted and expanded discharges will be issued if the above limits can be achieved. All permit renewals which result in no increase in pollutant loading are exempt from Tier II requirements. No new zones of initial dilution are allowed in Tier II waters.

Should a discharger not be able to meet the above limits, the Kentucky regulation allows a discharger to request less stringent limits based on a demonstration to the Cabinet including:

An alternatives/enhanced treatment analysis (including alternate discharge locations), and

A pollution prevention analysis.

Less stringent limits (and the subsequent additional lowering of water quality) are allowed by the Commonwealth if alternate treatment/disposal techniques are justified based on the inability of a discharger to meet the Tier II limits specified in this subsection.

The Commonwealth has stated that any decisions regarding determinations of important economic or social development will be made at this point in the procedures:

"The process for determining under what circumstances economic and social development is important enough to allow a lowering of water quality has not been developed. The Cabinet and the review panel spent many hours discussing this process and came to no consensus. The Cabinet feels this is an important local decision that needs to be determined on a case by case basis. It is envisioned that procedures in 5(b) will incorporate an economic and social importance evaluation by the very nature of the analyses. The less stringent level of treatment decision (if allowed) will have been made with this in mind."

#### Tier I

The adopted revisions assign a category of "use protected waters" to all waters not designated as Tier II waters or ONRWs. The revisions require all water quality criteria and designated or existing uses be maintained for these waters. The revisions are fully consistent with the federal requirements in the area of Tier I protection.